Proven Local Options to Reduce Emissions

Port of Houston Authority

Agenda

- Port of Houston
- Getting Started
- Approach/Goals
- Lessons Learned
- Conclusions

Port of Houston

- 6th Largest Port in the World
- 1st in US in Foreign Tonnage
- 2nd in US in Total Tonnage
- 287,000 Jobs for Houston & Texas
- 100,000 Barges/7,000 Vessels Per Year

Port of Houston Authority

- Political Subdivision of the State
- Board of 7 Commissioners
- 10 Facilities
- Owns 9,000 Acres
- 150 Tenant Properties
- General Cargo to Containers
- 500 employees

Getting Started

- SIP Development Began with Regional Air Quality Planning Committee in 1998
- Houston Area Needed Every Emission Reduction Possible
- Port Reviewed It's Inventory in the SIP
- Developed an Air Committee of Operations, Consultants, Attorneys, and Environmental Department

Goals for Emission Reductions

- Goal 1 - Reduce Port Authority Emissions
- Goal 2 - Maintain Operations in Rule Making Process
- Goal 3 - Influence Port Authority Tenant/User/Contractor Emissions
- Goal 4 - Encourage Associated Maritime Interests

Approach
First Step - Research

- Attended Air Quality Training Courses
- Attended Air Conferences
- Visited 3 California Ports
- Discussions with Trade Association
- Regular Meetings with EPA and TCEQ
- Researching Emission Reduction Technologies

Second Step - Inventories

- Determined Inventories were Based on Inaccurate Assumptions
- Needed to Understand Largest Sources
- Received Partial Grant Funding to Refine Inventories
  - Offroad Port Equipment – 1.2 to 3 tpd
  - Marine Vessels – 34 tpd
- Unexpected Benefit – Educational Tool

Third Step – Call for Vendors

- Air Committee Interviewed Vendors
- Determined Essential Criteria:
  - Maintain Operational Capabilities
  - Expected Reductions
  - Fueling Requirements
  - Costs – Infrastructure, Retrofit, Maintenance
  - Safety
  - Previous Testing Results
  - Manufacturer's Warranty
  - Physical Constraints of Equipment
  - Technology Availability

Goal 1: Reduce PHA Emissions

Demonstration Tests Completed

- Lubrizol's PuriNOx
  - 25% NOx, 30% PM
  - Ease of Conversion
  - Company Commitment
- Lubrizol's PuriMuffler
  - PM Reductions
  - Low Costs
- Propane
  - Fueling – Infrastructure and Operability
  - Vehicle Availability
- SCR
  - 80%+ Emission Reductions

Demonstrations (cont.)

- EcoSystems – Fuel Vapor Enhancer
  - Ease of Installation
  - Low Costs
- Other Diesel Emulsions
  - Competition


PORT OF HOUSTON AUTHORITY


HAMBURG SÜD

Results

- PuriNOx Running Strong for 3 Years
  - 3-550 HP Cranes and 5-190 HP Trucks
  - Expanding to 39 Pieces with TERP funding
  - Difficulty with Marine Engine and Engines with HP Issues
- Propane
  - PHA Owns 15 Vehicles, 1 Fueling Station
  - Offroad Not Feasible
  - Vehicles Currently Not Available
  - Operability Issues
  - High Fuel Costs

Results (cont.)

- SCR's
  - 86% Reduction in NOx
  - Extremely High Cost Per Ton
  - Can't Guarantee Urea is Injecting
- EcoSystems
  - Waiting for Emission Testing
  - Visual Tests Show Improvements
  - Easy Install/No Maintenance
- Other Diesel Emulsions
  - Waiting for Emission Testing

Future Demo's

- Fuel Additives
- SCR Advancement
- Fuel Cell

Goal 2: Maintain Operations in Rule Making Process

Initiatives

- MOU
  - TCEQ Promulgated Rule for Construction Shift
  - Shut Down Port Operations 6 a.m. to Noon
  - PHA Agreed to Sign MOU to Reduce Emissions Offsetting Construction Shift
  - TERP Replaced Construction Shift
- Educate Agencies

Goal 3: Influence Tenant/User/Contractor Emissions

Tenants/Users

- Held Workshops for Education on the SIP, TERP, and Emission Inventories
- Selected Certain Tenants for Focused Influence
- Posted Notices Concerning 5 Minute Idle Rule and Educated Port Police
- Developing Brochure for Distribution
- Added Air Component to Tenant Inspections

Contractors

- Developed Required Clean Air Plan for Bid Documents
  - Contractor Receives Add'l Points for Participation
  - Simple One Page Form with Approved Items
- Developed NOx Calculator for General Conformity Provisions

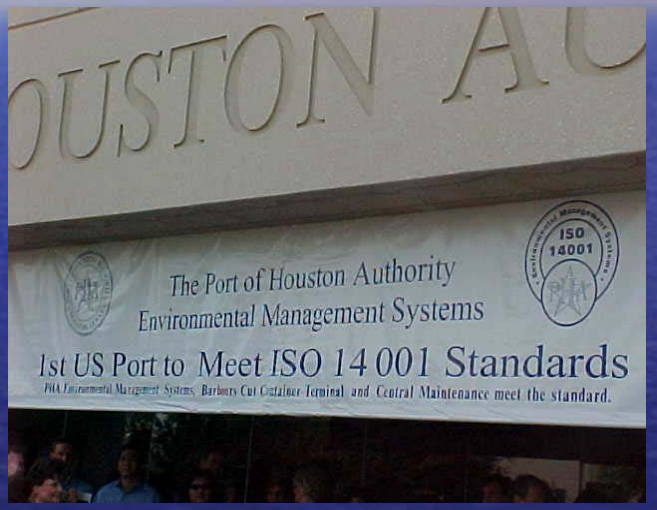
Goal 4: Encourage Association Maritime Interests

Initiatives

- Assisted with Tug/Tow MOU for 1.1 tpd Voluntary Measure
- Attempting to Implement Voluntary Measure for Quality Shipping
- Relationship with MARAD
- Assist with Port Air Quality Subcommittee
- Education

PHA Air Quality Commitments

- ISO 14001 Objective and Target with Tracking for Air Quality Reductions
- Purchase ULEV when Available
- Engine Bid Specs -Tier II Engines, PuriNOx
- Green Building
- Staff and Funding Commitments



Environmental Management ISO 14001 PHA PORT OF HOUSTON AUTHORITY

Lessons Learned

- Senior Management Buy In Essential – Costs and Staff Time
- Involve Operational Department
- Look for Hidden Costs
- Pick Low Hanging Fruit
- Start Small
- Emission Testing is Complicated
- Look for True Partnership with Vendor
- Funding is Available
- EDUCATE, EDUCATE, EDUCATE

No. 1 Lesson Learned

WE NEED EPA's ENGINE TECHNOLOGY VERIFICATION PROGRAM

Summary

- Individual Organizations Can Contribute to Voluntary Emission Reductions
- Must be Willing to Invest Funding and Staff Time
- Reductions Can Be Through a Variety of Measures
- Need EPA's Assistance in Technology Verification Program

Laura Fiffick
lfiffick@poha.com
713-670-2438